

EPIC Radiance Simulator for Deep Space Climate ObserVatoRy (DSCOVER)

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The Deep Space Climate ObserVatoRy (DSCOVER) is a planned space weather mission for the Sun and Earth observations from the Lagrangian L1 point. Onboard of DSCOVER is a multi-spectral imager EPIC designed for unique observations of the full illuminated disk of the Earth with high temporal and 10 km spatial resolution. Depending on latitude, EPIC will observe the same Earth surface area during the course of the day in a wide range of solar and view zenith angles in the backscattering view geometry with the scattering angle of 164-172°. To understand the information content of EPIC data for analysis of the Earth clouds, aerosols and surface properties, an EPIC radiance Simulator was developed covering the UV-VIS-NIR range including the oxygen A and B-bands ($\lambda=340, 388, 443, 555, 680, 779.5, 687.7, 763.3 \text{ nm}$). The Simulator uses ancillary data (surface pressure/height, NCEP wind speed) as well as MODIS-based geophysical fields such as spectral surface bidirectional reflectance, column water vapor, and properties of aerosols and clouds including optical depth, effective radius, phase and cloud top height. The original simulations are conducted at 1 km resolution using the look-up table approach and then are averaged to 10 km EPIC radiances. This talk will give an overview of the EPIC Simulator with analysis of results over the continental USA and northern Atlantic.